

# STRUCTURED ADAPTIVE MESH REFINEMENT FOR COMPUTATIONAL REACTING FLOWS

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## ABSTRACT

Given the large ranges of length and time scales inherent in combustion flow fields, and the resulting exorbitant computational costs of computing even simple 2D laboratory flames with detailed kinetics, adaptive mesh refinement (AMR) has emerged as a necessary tool for large-scale computations of reacting flow with detailed chemistry and transport. This talk will cover a brief review of structured adaptive mesh refinement (SAMR) techniques as applied to reacting flow modeling, and will discuss our experience with the utilization of SAMR techniques for computations of reacting flow with detailed kinetics. The talk will include discussions of the implementation of operator split time integration, projection methods for low Mach number flow, Runge-Kutta-Chebyshev time integration of diffusive transport terms, and high-order spatial discretizations and interpolations, in the context of SAMR. Results will be shown illustrating ignition and jet flame computations with AMR.